

WHAT IS CLAIMED IS:

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1. A serial bus interface device having a function of automatically reconstructing a topology when the device is inserted or withdrawn during operation of a serial bus,  
comprising a physical layer circuit serving as a physical interface without being given an identification number when the serial bus interface device is connected to the serial bus.
  2. A serial bus interface device according to claim 1, further comprising data storing unit for storing data on the serial bus, which is received by the physical layer circuit.
  3. A serial bus interface device having a function of automatically reconstructing a topology when the device is inserted or withdrawn during operation of a serial bus,  
comprising a physical layer circuit serving as a physical interface to which one or more identification numbers are assigned when the serial bus interface device is connected to the serial bus.
  4. A serial bus interface device according to claim 3, further comprising data storing unit for storing data on the serial bus, which is received by the physical layer circuit in association with the identification number(s).
  5. A serial bus interface device according to claim 2, further comprising data condition detecting unit for monitoring data on the serial bus, which is received by the physical layer circuit and, when data matching a predetermined condition is detected, outputs a trigger signal,  
wherein the data storing unit stores data in response to the

*sub 11* → output of the trigger signal.

6. A serial bus interface device according to claim 1, further comprising a control circuit for transferring data to be transmitted onto the serial bus via the physical layer circuit to the physical layer circuit.

7. A serial bus interface device according to claim 6, further comprising transmission data storing unit for storing data to be transmitted.

8. A serial bus interface device according to claim 7, further comprising data transmission condition detecting unit for monitoring data on the serial bus, which is received by the physical layer circuit and, when data matching a predetermined condition is detected, outputs a trigger signal,

wherein the control circuit transfers data to be transmitted which is stored in the transmission data storing unit in response to the output of the trigger signal to the physical layer circuit.

9. A serial bus interface device according to claim 1, further comprising:

a pair of communication ports; and

converting unit for converting data received from the serial bus via the physical circuit,

wherein data received by one of the pair of communication ports or the converted data is transferred to the other communication port.

10. A serial bus interface device according to claim 4, further comprising:

*DWA1* data condition detecting unit for monitoring data on the serial bus, which is received by the physical layer circuit in accordance with an identification number and, when data matching a predetermined condition is detected, outputting a trigger signal corresponding to the identification number,

wherein data is stored in the data storing unit in association with the identification number in response to the output of the trigger signal corresponding to the identification number.

11. A serial bus interface device according to claim 3, further comprising a control circuit for transferring data to be transmitted onto the serial bus in accordance with an identification number via the physical layer circuit to the physical layer circuit.

12. A serial bus interface device according to claim 11, further comprising transmission data storing unit for storing data to be transmitted according to the identification number.

13. A serial bus interface device according to claim 12, further comprising data transmission condition detecting unit for monitoring data on the serial bus, which is received by the physical layer circuit in accordance with an identification number and, when data matching a predetermined condition is detected, outputting a trigger signal corresponding to the identification number,

wherein the control circuit transfers data to be transmitted according to the identification number stored in the transmission data storing unit in response to the output of the trigger signal corresponding to the identification number to the physical layer circuit.

*Dmb AI* → 14. A serial bus interface device according to claim 3, further comprising:

a group of communication ports according to the identification numbers; and

converting unit for converting data received from the serial bus through the physical layer circuit,

wherein data received by any one of the group of communication ports or the converted data is transferred to at least one of the other communication ports.

15. A serial bus interface device according to claim 1, wherein the serial bus interface device is a bus analyzer for analyzing the serial bus.